THE ROLE OF BUSINESS STRATEGY ON THE ADOPTION AND EFFECTIVENESS OF BROAD-BASED EMPLOYEE SHARE OWNERSHIP

ABSTRACT

Purpose: In this research, we try to answer the question of when broad-based employee share ownership (ESO) is more likely to be used and how it can be managed more effectively from the vertical fit perspective in strategic human resource management.

Design/methodology/approach: The study analyzes an unbalanced panel sample of 614 organizations (1,601 organization-year data points) in South Korea, utilizing hierarchical linear modeling (HLM).

Findings: The analysis demonstrates that organizations are more likely to adopt broad-based ESO when they utilize the prospector and analyzer strategies as opposed to the defender strategy. The analysis also reveals that the relationship between broad-based ESO and labor productivity is positive only when organizations utilize the prospector strategy as opposed to other types of strategies (i.e., analyzer and defender strategies).

Practical implications: The findings first indicate that the decision to adopt a broad-based ESO in organizations should be informed by their business strategy if they want to enhance labor productivity. Specifically, our results demonstrate that only the prospector firms, rather than defenders or analyzers, can reap the productivity benefit of broad-based ESO. Second, since

innovation is a major source of productivity for prospector firms, our findings demonstrate that a broad-based ESO can be a vehicle that drives innovation. As a result, firms may want to consider utilizing broad-based ESOs to foster innovation.

Originality/value: The findings emphasize the relevance of the 'vertical fit' perspective in examining the broad-based ESO and firm productivity relationship. Most past research utilized the 'horizontal fit' framework in refining the relationship between broad-based ESO and productivity. Thus, our study emphasizes the need to utilize the 'vertical fit' perspective, and not only the 'horizontal fit' perspective, in the broad-based ESO research. Through this, the study meaningfully extends the research on the productivity effect of broad-based ESO by adding an important moderator (i.e., strategy) to the model.

Keywords: Broad-based employee share ownership, business strategy, vertical fit, labor productivity

INTRODUCTION

Broad-based employee share ownership (ESO) has often been identified as a potential tool to increase the productivity of firms via various mechanisms. As a result, it has received strong attention from both practitioners and academics. In fact, the productivity/performance effect of ESO has been one of the most widely researched topics in the area of compensation (O' Boyle, Patel, Gonzalez-Mule, 2016).

Although the majority of the evidence points to an overall positive effect of broad-based ESO on productivity/performance (e.g., Freeman et al., 2010; Kim & Ouimet, 2014), the magnitude of this effect varies across studies, with some studies reporting no productivity/performance effects (e.g., Kruse, 1992; Sengupta & Yoon, 2018; Yoon & Sengupta, 2019a). The mixed evidence has contributed to the emergence of contingency arguments that acknowledges the role of contextual factors in moderating this relationship (Kaarsemaker & Poutsma, 2006; Kruse, Freeman & Blasi, 2010; Sengupta, 2008; Yoon & Sengupta, 2019b). The emerging view is that broad-based ESO alone is not enough, and certain conditions must exist to yield desired productivity outcomes (e.g., Whitfield, Pendleton, Sengupta & Huxley, 2017).

Specifically, the 'horizontal fit' between broad-based ESO schemes and other human resource management (HRM) practices such as participation in decision-making (e.g., Blasi et al., 2010; Freeman, Kruse & Blasi, 2004; Kruse et al., 2010), profit-sharing (e.g., Blasi et al., 2010; Freeman et al., 2004; Kruse et al., 2010), and training (Whitfield et al. 2017) has been emphasized. In contrast, the 'vertical fit' between business strategy and broad-based ESO remains under-researched despite the compelling theory and evidence suggesting that the productivity/performance can be amplified when high-commitment management practices are

aligned with appropriate business strategy (e.g., Boyd & Salamin, 2001; Michie & Sheehan, 1999a, 1999b, 2005; Rajagopalan & Finkelstein, 1992; Yanadori & Marler, 2006).

Crucially, the notion that broad-based ESO can be more helpful to organizations that focus on innovation (Yanadori & Marler, 2006) has not been explicitly tested despite the importance of innovation in today's knowledge-intensive economy. Thus, this study attempts to answer the questions of how business strategy affects the adoption as well as the effectiveness of broad-based ESO.

So, through this study, we first try to answer the question of 'which organizations are more likely to adopt broad-based ESO schemes?' A majority of studies on this topic examine the effect of broad-based ESO on various performance outcomes. Very few studies examine broad-based ESO as an outcome. Moreover, the few studies examining the relationship between innovation strategy and broad-based ESO adoption yield mixed results. Some demonstrate a positive relationship between innovation strategies and broad-based ESO adoption (e.g., Yanadori & Marler, 2006). Others show a positive relationship between innovation-hindering behaviors (e.g., risk-averse behaviors) and broad-based ESO schemes (Gamble, 2000). Thus this study seeks to add further depth to the debate by examining the effect of business strategy on broad-based ESO adoption.

Second, in this research, we investigate the moderating effect of innovation-led business strategy (i.e., prospector strategy) on the broad-based ESO and labor productivity relationship. The few studies that have examined the moderating effect of business strategy on the relationship between compensation practices (including ESO) and firm performance/productivity (e.g., Chen & Jermias, 2014; Gomez-Mejia, 1992) have some limitations. For example, the study revealing the performance benefits of the fit between compensation practices and business strategy

(Gomez-Mejia, 1992) focuses on diversification rather than innovation strategies. Another study highlighting the negative productivity effects of the misfit between ESO and business strategy (Chen and Jermias, 2014) focuses on executive ESO rather than broad-based ESO. Hence, a study that investigates the interaction effect of broad-based ESO and innovation strategy on labor productivity can make a meaningful contribution to the broad-based ESO research.

The current study achieves the two aforementioned objectives by analyzing an unbalanced panel dataset in South Korea (hereinafter Korea). Specifically, our study suggests that the innovation-led business strategy (i.e., prospector strategy) affects the adoption of broad-based ESO and its effectiveness in enhancing labor productivity. Hence, it emphasizes the need to utilize the 'vertical fit' perspective, and not only the 'horizontal fit' perspective, in the broad-based ESO research.

THEORETICAL BACKGROUND AND HYPOTHESIS

Past studies on the adoption of broad-based ESO

It has been widely argued that HRM policies that are aligned with the firm's strategy are more effective (Delery and Doty, 1996; Guthrie et al., 2002; Han et al., 2019; Michie & Sheehan, 2005; Schuler and Jackson, 1987). Specifically, early compensation theorists argued that performance benefits are observed when there is a match between business strategy and compensation strategy, and hence the type of business strategy would inform the compensation system (e.g., Boyd & Salamin, 2001; Gomez-Mejia, 1992; O' Boyle et al., 2016; Schuler & Jackson, 1987; Yanadori & Marler, 2006). Specifically, it was expected that firms pursuing an innovation strategy are likely to adopt broad-based ESO (Schuler & Jackson, 1987; Miles and Snow, 1978). The argument is that the competitive advantage of innovative firms is derived from

investment in high-quality human capital (Michie & Sheehan, 1999a, 199b). The presence of broad-based ESO allows firms to realize expected benefits from firm-specific human capital investment because these schemes counteract potential risks through 'lock-in' mechanisms (financial incentives, vesting procedures, etc.) that foster longer-term employment relationships. The evidence on the relationship between innovation strategy and broad-based ESO is, however, scanty and inconsistent as outlined in the introduction section (e.g., Gamble, 2000; Yanadori & Marler, 2006). Further research is required to reconcile this conflicting evidence.

Past studies on the productivity benefits of broad-based ESO

The productivity benefits of broad-based ESO are widely theorized. The dominant view is that broad-based ESO schemes align employee interests with the organization by allowing employees to participate in the financial prosperity of the firm. This, in turn, fosters higher commitment and labor productivity (golden path thesis) (Blasi et al., 2010; Freeman et al., 2010; Sengupta et al., 2007). Another argument is that the financial rewards associated with these schemes are believed to be a powerful retention tool. Thus, broad-based ESO schemes foster a longer-term employment relationship, thereby enabling firms to benefit from investments in firm-specific human capital (golden handcuff thesis) (Blair & Kruse, 1999; Marsden, 1999; Sengupta et al., 2007).

Further insights on the productivity effect of broad-based ESO are provided by Klein's (1978) 'intrinsic,' 'instrumental,' and 'extrinsic' satisfaction models. Klein (1978) argues that different employee ownership dimensions contribute to higher levels of employee satisfaction, commitment, employee well-being, and, ultimately, higher productivity. Specifically, the physical ownership of shares enhances employee commitment, well-being, and satisfaction with the company (intrinsic satisfaction model). Whereas enhanced employee influence in company

decision-making, which is often associated with employee ownership, increases employee commitment (instrumental satisfaction model). Finally, if employee share ownership is financially rewarding, it yields higher commitment (extrinsic satisfaction model).

This view is consistent with agency theory, which suggests that financial incentives make the interests of agents (employees) compatible with those of the parents (owner) (Jensen & Meckling, 1976). This argument supports the unitarist perspective, which emphasizes a synergy between the profit-maximizing objective of the firm and employee satisfaction, well-being, and commitment. As a result, the theory alludes that the more company stock an employee owns, the greater is the financial worth, and he or she is motivated to be more productive (similar to the extrinsic satisfaction model). The theory also implies that the higher ESO coverage within the firm results in a greater sense of employee ownership (similar to the intrinsic satisfaction model) and influence (similar to the instrumental satisfaction model), which can translate into widespread positive feelings about the company and higher level of employee commitment.

The evidence, however, is mixed. The evidence on the effects of broad-based ESO on productivity ranges from positive (e.g., Freeman et al., 2010; Kim & Ouimet, 2014) to insignificant outcomes (e.g., Kruse, 1992; Sengupta & Yoon, 2018; Yoon & Sengupta, 2019a). This raised doubts about Kleins (1987) 'intrinsic' satisfaction model and whether the presence of ownership per se is a sufficient condition in fostering feelings of ownership and the resultant performance effects expected of ESO schemes.

The mixed evidence has resulted in the contingency perspective, which argues that certain conditions need to be in place to realize the productivity benefits of broad-based ESO. As outlined by Kleins (1987) extrinsic satisfaction model, one key dimension of ESO success is the financial rewards associated with employee share ownership, which is often measured in terms

of the size of equity stake held by employees. The evidence, however, is counterintuitive and inconclusive. The majority of the evidence reported a negative and significant association between the size of the equity stake and the firm performance (Conte and Svejnar 1988; Jones and Kato 1993; Park and Song 1995). Only two studies have found the opposite (Gamble, 1998; Jochim, 1979). On closer inspection, evidence suggests that the performance improvements were present only for the firms with strong monitoring mechanisms, which prevent managers from prioritizing their own interests above the interests of the firm. The research evidence offers the strongest support for Klein's (1987) 'instrumental' satisfaction model whereby the key empirical studies emphasize the importance of employee involvement/participation in decision making for securing desired attitudinal and performance/productivity outcomes (Black & Lynch, 1997; Dube & Freeman, 2010; Kruse, 1984; Klein, 1987; Long, 1982; McNabb & Whitfield, 1998; Michie & Sheehan, 1999b; Pendleton et al., 1998; Sengupta, 2008). However, recent studies investigating the participation mechanism have indicated that productivity benefits are observed when employees are offered a "real involvement" as opposed to "symbolic involvement" in the decision-making process (Robinson & Wilson, 2006; Sengupta, 2008).

Whilst there is debate around the specific combination of practices that complement one another, there is consistent and compelling evidence around the positive effects of bundling complementary HRM practices (horizontal fit). This, in turn, has focused the attention on exploring the compatibility between ESO and other HRM practices ('horizontal fit' perspective: e.g., Blasi et al., 2010; Freeman et al., 2004; Kruse et al., 2010, Whitfield et al. 2017; Yoon & Sengupta, 2019a).

In contrast, there is relatively little focus on the performance effects of the 'vertical fit' between broad-based ESO schemes and business strategy in general, and with innovation

strategy in particular. This is despite the compelling theory and evidence suggesting that compensation practices further enhance firm performance if they are aligned with appropriate business strategy (e.g., Boyd & Salamin, 2001; Gomez-Mejia, 1992; O' Boyle et al., 2016; Rajagopalan & Finkelstein, 1992; Yanadori & Marler, 2006).

Further validation was offered by the few studies that explored these arguments. For example, using both archival and survey data of executive compensation from 243 manufacturing firms, Gomez-Mejia (1992) demonstrated that firm performance is more positive when compensation practices are aligned with the diversification strategy. More recently, Chen and Jeremias (2014) explored the performance effects of aligning the business strategy (i.e., differentiation vs. cost-cutter) and executive stock options using a dataset of 194 firms from the Compustat S& P 500 database. The study revealed that a misfit between business strategy and compensation structure negatively affects firm performance.

These studies indicate that the alignment between business strategy and compensation practices yields positive performance outcomes, and misalignment has detrimental effects. These studies, however, either focus on the "diversification" strategy (Gomez-Mejia, 1992) or "executive" ESO (Chen & Jermias, 2014). The focus on differentiation strategy rather than innovation strategy and on executive ESO rather than broad-based ESO can be limiting for the following reasons.

First, there is a strong theoretical rationale for anticipating synergistic performance outcomes of aligning innovation strategy (e.g., prospector strategy) and broad-based ESO (Yanadori & Marler, 2006). The productivity effect of this vertical fit between innovation strategy (e.g., prospector strategy) and broad-based ESO, however, remains untested. One notable exception is the case study of a U.S.-based manufacturing company that achieved

productivity benefits by utilizing broad-based ESO to foster innovative employee behavior (Schuler & Jackson, 1987). This study, however, is based on a single case study rather than a formal statistical analysis of a representative sample of companies.

Second, broad-based ESO is almost synonymous with the popular notion of ESO. This is because broad-based ESO embodies the characteristics commonly associated with ESO, such as being a tool for widening the distribution of wealth (Kruse et al., 2010).

Lastly, recent developments in the ESO-performance relationship literature has acknowledged that the type of ESO scheme (broad-based vs. executive-only) can be a key determinant of performance outcomes (e.g., Blasi, Freeman & Kruse, 2016; Kruse et al., 2010; Kim & Ouimet, 2014). Thus, there is a need to investigate the interaction effect of broad-based ESO and innovation-led business strategy on labor productivity.

Strategic Orientation

Drawing on Miles and Snow (1978) typology, firms characterized by high innovation, growth, uncertainty, and considerable managerial discretion are referred to as 'prospectors.' In contrast, firms that encourage cost reduction, maximize efficiency, and focus on short-term gains are referred to as 'defenders.' In between these two extremes, there are 'analyzers (or fast-followers)' who exhibit certain characteristics of the Prospectors as well as Defenders. For example, they offer more managerial discretion than the Defenders but less than Prospectors. They are less focused on cost than the defenders but less focused on growth than the prospectors (Miles & Snow, 1978). Thus, the prospectors try to be successful by providing customers with new and innovative products/services before the other firms. In contrast, the defenders and analyzers try to gain market share by fast-following the innovations achieved by the prospectors and by providing customers with products/services at relatively lower prices.

In this study, we apply the prospectors vs. analyzers/defenders typology in theory building. This is because analyzers are closer to defenders than prospectors in terms of product and service innovation. Analyzers often do not introduce new products and services in the market but instead fast-follow the innovation initiated by the prospectors depending on its success (Miles & Snow, 1978). In alignment with this argument, past studies have often grouped analyzers and defenders together as firms with a conservative orientation while viewing prospectors as firms with innovative and proactive orientation (e.g., Aragon-Sanchez & Sanchez-Marin, 2005; Bird & Bleecher, 1995; Rousseau & Wade-Benzoni, 1994). Also, providing some statistical evidence to this argument, the strategy orientation measure developed by Segev (1987) demonstrates a high positive correlation between the items for analyzers and defenders. The explanatory factor analysis using this measure also revealed that the items for defenders and analyzers load on to a common factor (Moore, 2005).

Business strategy and the adoption of broad-based ESO

It is widely argued that firms that pursue innovation strategy (e.g., prospectors) are more likely to adopt compensation practices with a longer time horizon, such as an employee stock option plan with a vesting period (Michie & Sheehan, 1999a, 2005; Schuler & Jackson, 1987; Yanadori & Marler, 2006). This is because firms pursuing innovation strategy need to invest heavily in their employees since these firms rely on high-quality human capital to attain competitive advantage (Michie & Sheehan, 1999a, 1999b, 2005; O' Boyle et al., 2016; Yanadori & Marler, 2006; Valle, Martin, Romero & Dolan, 2000). In order to reap benefits from extensive human capital investment, it is vital that employee turnover is low, thereby maintaining a longer-term employment relationship (O' Boyle et al., 2016; Yanadori & Marler, 2006; Valle et al., 2000). ESO schemes are relevant in this context since they foster longer-term employment relationships

through ‘lock-in’ mechanisms (e.g., financial incentives and vesting procedures) and mitigate potential risks of investing in human capital (golden handcuff thesis).

Specifically, ESO schemes help to overcome the classic ‘hold up’ issue that prevents firms and employees from making investments in training because of potential risks borne by both parties (Guery & Pendleton, 2016; Pendleton & Robinson, 2010; Whitfield et al. 2017). Employers bear the risk of losing trained employees to competitors and thereby not realizing the productivity benefits of investment in training (Guery & Pendleton, 2016; Pendleton & Robinson, 2010; Whitfield et al., 2017). The employees bear the risk that firm-specific skills benefit only the current employer owing to the non-transferability of the newly acquired skills across organizations (Guery & Pendleton, 2016; Pendleton & Robinson, 2010). The ESO schemes can help to mitigate this ‘hold up’ issue and the employer-employee opportunism by providing employees residual rights to profits (Blair, 1995). Hence, ESO schemes encourage firms to invest in and reap the productivity benefits of these human capital investments (Schuler & Jackson, 1987; Yanadori & Marler, 2006).

Finally, the contingency perspective emphasizes the importance of aligning the business strategy with the HRM strategy to maintain competitive advantage and maximize productivity (Miles and Snow, 1978; Guthrie et al., 20020). It is expected that firms pursuing an innovation strategy will benefit from practices that help to recoup the high HRM investment in these firms by enhancing motivation and commitment, offering skill-based training and opportunities for utilizing/capitalizing on these skills (Guery & Pendleton, 2016; Michie & Sheehan, 2005). The presence of broad-based ESO schemes may contribute towards the fulfillment of the above three conditions. Drawing on Klein's (1987) satisfaction models and ESO evidence, it can be argued that the presence of broad-based ESO schemes is widely accepted as an effective tool that fosters

motivation and commitment. In addition to that, the golden handcuff theory posits that the financial incentives associated with ESO lowers employee turnover and encourages investment in firm-specific human capital, thereby strengthening the skills base. ESO linked to a longer-term vesting procedure, and seniority-based pay could support/reinforce/complement the opportunities for career growth and development.

The evidence supports these theoretical arguments. First, the research on the ESO and employee turnover relationship suggests that ESO is an effective retention tool and fosters longer-term employment relationships (Robinson &Wilson 2006; Sengupta et al., 2007). Second, empirical evidence also suggests that share ownership plans and investment in training are positively correlated in the U.S. (Ben-Ner, Burns, Dow & Putterman, 2000), Europe (Guery & Pendleton, 2016; Pendleton & Robinson, 2010; Robinson & Zhang, 2005), and broader international contexts (Pendleton, Poutsma, Van Ommeren & Brewster, 2003). Finally, the positive interaction effect of share ownership schemes and investment in training on firm performance is observed (Whitfield et al., 2017). Overall, these studies validate the view that firms with ESO plans usually have high levels of investment in training.

Furthermore, a majority of the evidence points to a positive correlation between innovation-led business strategy and ESO schemes (e.g., Chen & Jermias, 2014; Chang, Fu, Low, Zhang, 2015; Yanadori & Marler, 2006). Yanadori and Marler (2006) used compensation data for middle-level managers and professional employees from 237 firms in the high-technology industry from 1997 to 2000. The results suggested that firms with broad-based stock option plans complement the pursuance of an innovation strategy (Yanadori & Marler, 2006). A study from the Investors Responsibility Research Centre (IRRC) Dilution Database, which covers Standard and Poor′s (S&P) 1,500, also lent support to the positive correlation between

broad-based stock options and innovation (Chang et al., 2015). This finding is further validated by Chen and Jermias (2014), who found that firms pursuing a product differentiation strategy (similar to the prospector strategy) were likely to use stock options in comparison to cost leadership firms (similar to defenders). A study by Michie & Sheehan (1999a) also provides some evidence. Drawing on data from the 1990 Workplace Industrial Relations Survey, the researchers found that firms that use 'high road work practices' such as incentive pay (e.g., profit sharing and share ownership), work teams, job rotation, quality circles, total quality management (TQM) and high levels of training are more likely to innovate than firms without these practices.

There, however, is some counter-evidence to suggest an inverse relationship between the presence of broad-based ESO and innovation. For example, the study by Gamble (2000) indicates that the management of firms with high employee stock concentration became more risk-averse regarding commitment to innovation after the implementation of the stock ownership program. Further evidence is required to resolve the seemingly contradictory findings concerning broad-based ESO and innovation-led business strategy (e.g., prospector strategy). Thus, we present the following competing hypotheses.

Hypothesis 1a: Organizations are more likely to adopt broad-based ESO schemes when they utilize the prospector strategy as opposed to other strategies (i.e., analyzer and defender strategies).

Hypothesis 1b: Organizations are less likely to adopt broad-based ESO schemes when they utilize the prospector strategy as opposed to other strategies (i.e., analyzer and defender strategies).

The moderating effect of business strategy on the relationship between broad-based ESO and labor productivity

The main competitive advantage of the prospectors is to provide customers with innovative products/services before the other firms do. For this, high investment in R&D (or process innovation), more focus on long-term performance, and accumulation of firm-specific human capital is essential. Thus, from an HRM perspective, management based on high motivation and low turnover is a critical factor. In contrast, the main competitive advantage of analyzers and defenders are fast-following the prospectors and providing customers with products/services at a relatively low price. Consequently, fast-following behaviors and managerial efficiency are encouraged in these firms. From an HRM perspective, minimizing related labor costs (e.g., compensation and training costs) and encouraging short-term performance can be a critical factor. Thus, for these firms, maintaining a high level of motivation and a low level of turnover can be less relevant. In alignment with this argument, studies demonstrate that innovation is positively correlated with motivational factors such as job satisfaction (e.g., Al-Edenat, 2018; Brimhall & Mor Barak, 2018; Nikpur, 2018) and employee commitment (e.g., Ng, Feldman & Lam, 2010; Nikpour, 2018) and is negatively correlated with employee turnover (e.g., Eriksson, Qin & Wang, 2014; Wang, Zhao & Thornhill, 2015).

As discussed in the earlier section, broad-based ESO enhances firm productivity by increasing employee motivation (golden path thesis) and lowering employee turnover (golden handcuff thesis). Since high motivation and low turnover is a key determinant of productivity for the prospector firms compared to the defender/analyzer firms, we can expect the productivity-enhancing effect of broad-based ESO to be stronger in prospector firms. Of course, the effect of broad-based ESO increasing employee motivation and lowering employee turnover can also benefit defender and analyzer firms. In alignment with this argument, some studies that do not control for the differences in firms' business strategies exhibit a positive relationship between

broad-based ESO and productivity/performance (e.g., Sengupta et al., 2007). However, this effect for defender and analyzer firms can be weaker since high motivation and low turnover can be less relevant for their business success compared to prospector firms. Thus, we hypothesize the following.

> *Hypothesis 2: Business strategy moderates the relationship between broad-based ESO and labor productivity in that the relationship is more positive when firms utilize the prospector strategy as opposed to other strategies (i.e., analyzer and defender strategies).*

The hypothesized model in this study is depicted in Figure 1.

Place Figure 1 here.

METHOD

Overview and sample

The current study utilizes the Human Capital Corporate Panel (HCCP) to examine the research questions of interest. HCCP is publicly available in Korea and is intended to emulate the Korean economy of for-profit firms with 100 or more employees. The Korean Research Institute for Vocational Education and Training (KRIVET: www.krivet.re.kr/eng/) has administered the survey every two years since 2005. The survey results from 2005, 2007, 2009, 2011, 2013, and 2015 HCCP were available when this study was conducted. The survey has matched the information on the employer and its employees. It provides information on HRM practices, business and workforce characteristics, and employees' responses to participating organizations.

For this study, we have utilized 2007, 2009, 2011, and 2013 HCCPs. 2005 and 2015 surveys were excluded because some of the variables in the analysis model (i.e., investment in

training for 2005 HCCP and one-year lagged labor productivity for 2015 HCCP) were not reported. Excluding missing data, the final sample included 1,601 firm-year data points in 614 firms. 184 firms were in all four survey years (736 firm-year data points, 46.0 percent), 155 firms were in three of the four survey years (465 firm-year data points, 29.0 percent), 125 firms were in two of the four survey years (250 firm-year data points, 15.6 percent), and 150 firms were in only one survey year (150 firm-year data points, 9.4 percent).

The past studies examining the relationship between broad-based ESO and labor productivity using HCCP have demonstrated a null relationship (e.g., Sengupta & Yoon, 2018; Yoon & Sengupta, 2019a). Thus, identifying a condition that makes this relationship positive from the vertical fit perspective using HCCP can be practically meaningful.

Broad-based ESO in Korea

Broad-based ESO in Korea (which we will be referring to as *Ulisaju* later in this study) was introduced by the Korean government in 1958 as a wealth-sharing tool (Cin & Smith, 2002). Over time, there have been several reforms and tax incentives designed to foster higher employee participation and a longer-term employment focus. The ability of the scheme to achieve these objectives, however, has been questioned for several reasons. First, in most cases, ESOs are purchased by employees themselves, and the contribution of the company is minimal (Cin & Smith, 2002). Second, there has been a scaling down of a range of tax incentives after the IMF financial crisis in 1997. Initially, employees had to hold on to the stocks until they retired. In 1999, however, the compulsory holding time had been reduced to one year (Cin, Han & Smith, 2003; Kato, 2014). Third, even though, in principle, the broad-based Korean ESO is intended to be participatory in nature, in reality, employee participation in decision-making can be limited. In theory, Korean ESO holders can individually cast votes on all corporate-voting

issues that are defined by Korean business law (Cin et al., 2003). They also have similar rights as the other shareholders, which includes a right to convene a general meeting for shareholders and to select a board of directors and vote on security holders' proposals (Cin, Han, & Smith, 2003; Cin & Smith, 2002). However, in most cases, the chairman of the Employee Share Ownership Association (ESOA), which is the legally required established group within the firm to manage the employee-owned stocks (*Ulisaju)*, casts the votes on employees' behalf (Cin. et al., 2003). Consequently, voting rights are not exercised by the individual employees, and the *Ulisaju* scheme falls short of offering employee owner's participation in the true sense.

Despite these challenges, there are specific tax incentives in place which are designed to encourage employees to invest in the Korean ESOs and hold onto them for a longer period. For example, when employees purchase ESOs with their salary, the amount used to buy the stocks are not taxed. However, when the employees cash out their shares, the cashed out amount is treated as an earned income and taxed accordingly. To encourage employees to hold on to ESOs for longer, tax exemptions are offered in proportion to the length of holding. For example, if the employees keep their shares for three years, 50% of the amount that is cashed out is tax-exempt. If they hold on for five years, 75% of the amount becomes tax-exempt (Kim, 2015).

Measures

Labor productivity. Labor productivity was measured by the natural logarithm of sales per employee. The measure has been widely adopted by other HRM studies that examine labor productivity (e.g., Datta, Guthrie, & Wright, 2005; Huselid, 1995; Koch & Mcgrath, 1996). The one-year lagged labor productivity, as well as the same-year labor productivity, were utilized to accommodate the perspective that some time can be needed for the intended effect of the HRM practice to be realized (i.e., predictive perspective: Wright, Gardner, Moynihan & Allen, 2005).

Broad-based employee share ownership (ESO). HCCP surveyed the firms on their use of employee stock ownership plans and stock options. The employee stock ownership plan, which the HCCP referred to as "Ulisaju" in Korean, is a broad-based stock ownership scheme. The Capital Market Development Law in Korea requires firms utilizing the *Ulisaju* scheme to establish ESOA to manage the stocks within this scheme. The ESOA membership consists of the employees who own shares through the *Ulisaju* program. According to Yoon and Sengupta (2019a), the average employee participation rate in the *Ulisaju* program from 2007 to 2013, which was measured by the proportion of employees being the member of ESOA, was 76.1 percent. This provides evidence that the *Ulisaju* program in Korea is broad-based for the data collection period of our data (from 2007 to 2013). The broad-based ESO measure, in this study, was dummy coded with the firms that utilize the *Ulisaju* program as the broad-based ESO firm (1) and firms that do not utilize the *Ulisaju* program as the non-broad-based ESO firm (0). In contrast, we found no compelling evidence that the plans for stock options in Korea are broad-based. Therefore, we did not include the firms that utilize only the stock options and not the *Ulisaju* program as the broad-based ESO firm[1]. The HCCP did not report the participation rate of the *Ulisaju* program for each firm. Thus, we weren't able to utilize the participation rate as our measure or control for it in this study[2].

[1] The analysis of the sample including firms utilizing only the stock options as the broad-based ESO firms yielded the same result as in our main analysis in that the statistical significance and direction of the coefficients of key variables were the same.

[2] The 76.1 percent participation rate of *Ulisaju* program by Yoon and Sengupta (2019a) was based on statistics that Korean Securities Finance Corporation (www.ksfc.co.kr) publishes. HCCP provide no information on the *Ulisaju* program participation rate of the surveyed firms or the value of ESOs.

Business strategy. In HCCP, participating firms were asked the following question: which of the following best represents the market strategy of your firm's main product or service? The answer choices were:

(1) develop new products and/or services prior to other competitors and actively lead the market change.

(2) do not lead the development of new products and/or services, but selectively develop new products and/or services depending on the performance of the market leaders.

(3) maintain a stable market through the improvement of existing products and/or services, and do not engage in the active development of new products and/or services.

(4) none of the above three strategies.

The firms who selected the first, second, and third answer choices were classified as 'prospector,' 'analyzer,' and 'defender' firms, respectively. The firms who selected the last answer choice were excluded from the analysis. Only four cases chose the last answer (0.2 percent).

Control variables. Following previous studies that examine the relationships among business strategy, HRM practices, and labor productivity (e.g., Boyd & Salamin, 2001; Datta et al., 2005; Huselid, 1995; Koch & Mcgrath, 1996; Schuler & Jackson, 1987), we have controlled for various factors. Industry, size, sales growth, and capital intensity were controlled considering their influence on both the investment in HRM practices and labor productivity (Datta et al., 2005; Huselid, 1995; Koch & Mcgrath, 1996). The industry was classified into manufacturing, finance, and other services. The size was measured by the natural logarithm of the number of employees hired by the firm. Sales growth was measured by the growth in sales over the last two years. The capital intensity was measured as the natural logarithm of capital per employee. The

presence of a union was controlled, considering its effect on labor productivity (Freeman & Medoff, 1984). The overall pay level of a given firm was controlled for its effect on attracting and retaining productive workers and thereby affecting labor productivity (Barber & Bretz, 2000). We also followed Schuler and Jackson (1987) and Yoon and Sengupta (2019a) and controlled for HRM practices that are more likely to be present under the prospector strategy and may affect labor productivity as well as the effectiveness of ESO. These practices were the investment in training (measured as the training expenditure per employee) and the presence/utilization of the following HRM practices (each variable dummy coded): early promotion, internal job posting, a balanced scorecard for evaluation, and job evaluation for determining the pay level. Lastly, the survey year was controlled by dummy coding the four survey years (i.e., 2007, 2009, 2011, and 2013).

Analysis model

Considering the multi-leveled data structure (i.e., firm-year data points nested within a firm), the hierarchical linear modeling (HLM) method was utilized for the analysis. For the model predicting the adoption of broad-based ESO, HLM with Bernoulli distribution was utilized since the outcome is dichotomous. For the model predicting the natural logarithm of labor productivity, HLM with normal distribution was utilized. The only variable that did not vary by survey years was the industry. Thus, only the industry was modeled at level-2, while all the other variables were modeled at level-1 in predicting labor productivity and the adoption of broad-based ESO. Intraclass correlation (ICC) values were inspected to verify the non-independence in the data. ICC(1) values were 0.57 for broad-based ESO, 0.87 for the natural logarithm of same-year labor productivity, and 0.85 for the natural logarithm of one-year lagged labor productivity. ICC(2) values were 0.78 for broad-based ESO, 0.94 for the natural logarithm of same-year labor

productivity, and 0.94 for the natural logarithm of one-year lagged labor productivity. The high ICC values illustrate the need for utilizing the multi-level model for the analysis (Bliese, 2000; Krull & MacKinnon, 2001). The analysis was conducted utilizing the HLM software (Raudenbush, Byrk, Cheong, Congdon, & du Toit, 2011).

RESULTS

Descriptive statistics

The descriptive statistics of the variables involved in this study are presented in Table 1. One notable is the mean value of broad-based ESO: 0.262. This illustrates that 26.2 percent of firm-year data points (420 firm-year data points) in the sample have utilized a broad-based ESO (*Ulisaju* program). This translates into 210 firms utilizing broad-based ESO at some point in the four HCCP years that were analyzed in this study (2007, 2009, 2011, or 2013). Since our sample consists of 614 firms, this means that 34.2 percent of companies have utilized broad-based ESO at some point in these four survey years. Other values that are notable in the table are the positive correlations between prospector strategy and broad-based ESO (*r* between prospector strategy and broad-based ESO = 0.103, $p < 0.01$) and between broad-based ESO and labor productivity (*r* between broad-based ESO and same-year labor productivity = 0.078, $p < 0.01$; *r* between broad-based ESO and one-year lagged labor productivity = 0.099, $p < 0.01$). The negative correlation between defender strategy and broad-based ESO (*r* between defender strategy and broad-based ESO = -0.105, $p < 0.01$) is also notable.

Place Table 1 here.

The relationship between business strategy and the adoption of broad-based ESO

Tables 2 and 3 show the Bernoulli distribution HLM results. For the model with the base for comparison as the defender strategy (Table 2), the relationships between prospector strategy and the adoption of broad-based ESO are positive (coefficient in Model A1 = 0.863, SE = 0.211, $p < 0.01$; coefficient in Model A2 = 0.701, SE = 0.221, $p < 0.01$). These coefficients translate into an odds ratio of 2.370 (95 percent confidence interval: 1.566, 3.586) and 2.016 (95 percent confidence interval: 1.307, 3.110) for the coefficients in Models A1 and A2, respectively. Thus, the results indicate that firms utilizing the prospector strategy are more likely to adopt broad-based ESO than firms utilizing the defender strategy. However, for the model with the base for comparison as the analyzer strategy (Table 3), the relationship between prospector strategy and the adoption of broad-based ESO is not positive when various factors were controlled (coefficient in Model B2 = 0.290, S.E. = 0.188, ns). Therefore, we found partial support for Hypothesis 1a in that broad-based ESO is more likely to be adopted by prospector firms than defender firms. However, there was no significant difference in the likelihood of adopting broad-based ESO between prospector and analyzer firms.

Although not the main interest of this study, the results demonstrate that the relationships between analyzer strategy (with the base for comparison as the defender strategy in Table 2) and the adoption of broad-based ESO are positive (coefficient in Model A1 = 0.498, SE = 0.203, $p < 0.01$; coefficient in Model A2 = 0.411, SE = 0.209, $p < 0.05$). These coefficients translate into an odds ratio of 1.645 (95 percent confidence interval: 1.106, 2.448) and 1.508 (95 percent confidence interval: 1.001, 2.272) for the coefficients in Models A1 and A2, respectively. Thus, the results indicate that firms utilizing the analyzer strategy are more likely to adopt broad-based ESO than firms utilizing the defender strategy.

Place Tables 2 and 3 here.

The relationship between broad-based ESO and labor productivity

Tables 4 and 5 show the normal distribution HLM results. Although not the main research question of this study, the relationship between broad-based ESO and labor productivity can be examined in Models C2 and D2 of Table 4 and Models E2 and F2 of Table 5. All the relationships are insignificant (coefficient in Models C2 and E2 = -0.008, SE = 0.031, ns; coefficient in Models D2 and F2 = 0.045, SE = 0.036, ns). Thus, in this sample, we found no support for the positive relationship between broad-based ESO and labor productivity. This result is in alignment with the past studies examining the relationship between broad-based ESO and labor productivity using HCCP (e.g., Sengupta & Yoon, 2018; Yoon & Sengupta, 2019a).

Place Tables 4 and 5 here.

Moderating effect of business strategy on the relationship between broad-based ESO and labor productivity

For the model with the base for comparison as the defender strategy, the interaction effects of prospector strategy and broad-based ESO on labor productivity are shown in Models C3 and D3 of Table 4. The interaction effect is significantly positive in the model predicting one-year lagged labor productivity (coefficient in Model D3 = 0.179, SE = 0.078, $p < 0.05$), but not in the model predicting same-year labor productivity (coefficient in Model C3 = 0.064, SE = 0.065, ns). For the model with the base for comparison as the analyzer strategy, the interaction effects of prospector strategy and broad-based ESO on labor productivity are shown in Models E3 and F3 of Table 5. Again, the interaction effect is significantly positive in the model predicting one-year lagged labor productivity (coefficient in Model F3 = 0.129, SE = 0.066, $p < 0.05$), but not in the model predicting same-year labor productivity (coefficient in Model E3 = 0.052, SE = 0.055,

ns). Thus, we found support for Hypothesis 2 in the model that predicts one-year lagged labor productivity.

These findings are further validated through the simple slope analysis in Table 6. The simple slope analysis demonstrates that the relationship between broad-based ESO on one-year lagged labor productivity is significantly positive only when firms utilize the prospector strategy (simple slope = 0.130, $p < 0.05$). When firms utilize other types of strategies (i.e., either analyzer or defender strategies), this relationship was insignificant (simple slope for the analyzer = 0.001, ns; simple slope for the defender = -0.049, ns). This result indicates that firms utilizing the prospector strategy were 13.0 percent more productive in terms of one-year lagged labor productivity when broad-based ESO was present compared to when broad-based ESO was not present. For other types of business strategies (i.e., either analyzer or defender strategies), the labor productivity of firms with broad-based ESO was no different from firms without broad-based ESO at the five percent confidence level. This interaction effect is also depicted in Figure 2.

Place Table 6 and Figure 2 here.

Further analyses: Testing the assumptions

Although our hypotheses are mostly supported, we have made below two important assumptions in theory building.

Assumption 1: Prospectors are more innovative than other types of firms.

Assumption 2: Innovation is a stronger (or more important) source of productivity for prospectors than other types of firms.

Thus, we have conducted further analyses to test our assumptions.

The first assumption was tested by comparing the descriptive statistics on the registered number of patents by the firms' strategic orientations, with an expectation here that firms engaging in more innovative activities will register more patents. The statistics in Table 7 demonstrates that prospectors register more patents in a given year than analyzers or defenders. The statistics also illustrate that a higher portion of prospectors registers at least one or more patents in a given year than analyzers or defenders. We also have conducted an HLM analysis to predict a number of firm's registered patents in a given year with firms' strategic orientations. The results are reported in Table 8. As outlined in Model G1, the HLM result predicts prospectors to register 8.632 more patents in a given year than defenders (coefficient in Model G1 = 8.632, SE = 4.175, $p < 0.05$). Thus, we found support for Assumption 1.

The second assumption was tested by conducting an HLM analysis to predict labor productivity with the number of patents by firms' strategic orientations. The expectation here is that firms with innovation as a more important source of productivity will demonstrate a stronger positive relationship between the number of patents and labor productivity. If the higher number of registered patents can imply more engagement in innovative activities, a positive relationship between the number of patents and labor productivity indicates that more engagement in innovative activities leads to higher firm productivity. The results are outlined in Table 9. The relationship between the number of patents and labor productivity is only significantly positive for prospector firms (coefficient in Model I1 = 0.000093, SE = 0.000046, $p < 0.05$; Model I2 = 0.000098, SE = 0.000042, $p < 0.05$; Model J1 = -0.00041, SE = 0.00023, $p < 0.10$; Model J2 = -0.00042, SE = 0.00019, $p < 0.05$; Model K1 = 0.002, SE = 0.002, ns; Model K2 = 0.001, SE = 0.001, ns). Thus, the results indicate that innovation is a source of productivity for only prospectors and not for analyzers or defenders. As a result, Assumption 2 is also supported.

Considering the results outlined in this section, our assumptions of equating prospector strategy as an innovation strategy and viewing innovation as the major source of productivity for prospector firms throughout this manuscript seem reasonable.

DISCUSSION

Findings and theoretical implications

The results in this study first demonstrate that the firms are more likely to adopt a broad-based ESO when they utilize the prospector and analyzer strategies as opposed to the defender strategy. The findings also demonstrate that the relationship between broad-based ESO and labor productivity is moderated by the type of business strategy. Specifically, this relationship is positive only for prospector firms. In contrast, this relationship is insignificant for the defender and analyzer firms.

The findings in this study provide us with two important implications in advancing the theoretical model for broad-based ESO. First, the results indicate that business strategy can be an important factor in the adoption of broad-based ESO. Although some studies demonstrate that firms with business strategies that focus on innovation (e.g., prospectors) are more likely to adopt broad-based ESO schemes (e.g., Yanadori & Marler, 2006), others suggest a negative relationship between innovation and broad-based ESO schemes (e.g., Gamble, 2000). Our study results partially support the view that organizations encouraging innovation are more likely to adopt broad-based ESO (i.e., prospectors as opposed to defenders). Our study makes a further contribution by testing this thesis in a non-western setting (i.e., in South Korea) in contrast to previous studies that have been confined to U.S. and western firms (Boyd & Salamin, 2001).

Second, the findings emphasize the relevance of the 'vertical fit' perspective in examining the broad-based ESO and firm productivity/performance relationship. Specifically, we find that the type of business strategy is crucial in realizing the productivity benefits of broad-based ESO. Furthermore, the results validate Miles and Snow's business strategy typology (1978) as the moderator in this relationship. Our analysis shows that only the prospectors, as opposed to defenders and analyzers, benefit from broad-based ESO in terms of labor productivity. Most past research has utilized the 'horizontal fit' framework in refining the relationship between broad-based ESO and productivity. Very limited research on ESO utilizing the 'vertical fit' perspective has focused on "executive" ESO (e.g., Chen & Jermias, 2014) rather than "broad-based" ESO. Thus, our study extends the research on the productivity effect of broad-based ESO by adding an important moderator to the model. The productivity benefits of developing HRM systems with compatible HRM practices (horizontal fit) and strategy (vertical fit) is widely accepted and enshrined in the configurational perspective. However, there is a debate around the ideal configuration of HRM practices for maximizing productivity. This paper offers guidelines in terms of which strategy is best suited for realizing the expected benefits of broad-based ESO. Furthermore, from a broader strategic HRM perspective, the findings emphasize and validate the view proposed by Michie & Sheehan (2005) that the effectiveness of HRM practices will depend, partly, on the company strategy being pursued.

Related to the second point discussed above, our study results also provide possible explanations on why the productivity effect of ESO was not observed in earlier studies that utilize HCCP (Sengupta & Yoon, 2018; Yoon & Sengupta, 2019a). In both studies, more than 64 percent of firms in the sample utilized non-prospector strategies (labeled as selective exploration and exploitation strategies in these studies). A large portion of Korean firms during the study

period was competing based on strategies focusing on efficiency rather than innovation, and this may have contributed to the weaker effect of ESO on labor productivity than samples from other parts of the world.

Another reason for not observing the main effect of broad-based ESO on labor productivity is that the ESO practice in the Korean context is not sufficiently participatory in nature. As we have outlined in the section 'Broad-based ESO in Korea' (a sub-section under the METHOD section), voting rights associated with share-ownership are often not exercised by the individual employees. Instead, votes are cast on their behalf by the chairman of the ESOA. The lack of productivity effects in the Korean context can be attributed to the limited employee voice/participation/involvement conferred by the *Ulisaju* program on the employee-owners. Indeed, there is compelling and consistent evidence to suggest that opportunities for participation in decision making play a key role in making HRM practices effective (Black and Lynch, 1997; Michie & Sheehan, 1999b) and fostering feelings of ownership and subsequently influencing employee productivity and maintaining competitive advantage (Dube & Freeman, 2010; Michie & Sheehan, 1999b; Pendleton et al., 1998; Sengupta, 2008). Given the rich data validating the significance of participatory mechanisms in enhancing ESO effectiveness, a possible reform to the *Ulisaju* system, including greater involvement of employee shareowners, can strengthen the intended effect of ESO and thereby strengthen the productivity of firms. This would, in effect, be strengthening the horizontal measures to be supportive of the vertical intent, to the mutual benefit of both, thereby strengthening the productivity and innovation performance of firms.

Practical implications

Our study also provides valuable implications for practice. Whilst there is extensive theory and evidence around the productivity benefits of ESO, there is little guidance on the specific

conditions under which productivity benefits of broad-based ESO can be realized. This paper offers some clarity on this aspect. The findings indicate that the decision to adopt a broad-based ESO in Korean organizations should be informed by their business strategy if they want to enhance labor productivity. Specifically, our results demonstrate that only the prospector firms, rather than defenders or analyzers, can reap the productivity benefit of broad-based ESO. Therefore, our findings warn managers from expecting broad-based ESO to be a panacea for the productivity issues that they may face. So, managers may want to consider their business strategies when adopting ESO schemes.

Second, since innovation is a major source of productivity for prospector firms, our findings demonstrate that a broad-based ESO can be a vehicle that drives innovation. As a result, firms may want to consider utilizing broad-based ESOs to foster innovation. The results may also provide policymakers of developed societies with a valuable implication. The economies in these societies are being restructured to be more technology- and knowledge-intensive, and fostering innovation of the firms and encouraging the use of broad-based ESO within these societies can be crucial for the restructuring process to be successful (Curran & Stanworth, 2018; Glugiewicz & Gruchman, 2018).

Limitations

Although our research contributes to the field of broad-based ESO, it is not without limitations. First, our results may not be generalized beyond the Korean economy. The Korean economy is still manufacturing-focused (e.g., 73.3 percent of the firms in our sample are manufacturing firms). It may be the case that prospectors in the manufacturing industry are more likely to benefit from the golden path and handcuff effects of broad-based ESO than those in the service industry. As a result, the interaction effect of prospector strategy and broad-based ESO on labor

productivity may be more pronounced in a manufacturing-centered economy. This effect may not be observed in service-oriented economies.

Second, Hypothesis 1a is only partially supported in that both prospectors and analyzers are more likely to adopt broad-based ESO than defenders. The original hypothesis was that prospectors are more likely to adopt broad-based ESO than analyzers and defenders. We were not able to find an answer to why this would be the case through this research. Future studies on this topic need to develop a more detailed and comprehensive theory to explain this phenomenon and better understand the vertical fit aspect of the relationships between broad-based ESO, strategy, and labor productivity.

Third, we found support for Hypothesis 2 only for the one-year lagged labor productivity model and not in the same-year labor productivity model. A possible explanation for this result could be that some time is required for the intended HRM outcome to materialize. This may imply the need for HRM-outcome relationships to be investigated in a predictive manner, as opposed to post-predictive or contemporaneous manners (Wright et al., 2005). Nevertheless, the results need to be interpreted with caution.

Fourth, an issue of reverse causality can be raised for testing Hypothesis 1a. It can be the case that broad-based ESO firms are more likely to develop prospector or analyzer strategies over time. Future research needs to design studies in a way to resolve this issue. The issue of reverse causality for testing Hypothesis 2 is, however, can be less problematic in that the dependent variable (i.e., labor productivity) is also measured in terms of a one-year lagged fashion. So, there is a time gap between the presence of broad-based ESO and labor productivity.

Lastly, the measure for broad-based ESO (*Ulisaju*) does not reflect the amount or value of shares that each employee owns. Although the average employee participation rate in the

Ulisaju program during the data collection period for this study was 76.1 percent (Yoon & Sengupta, 2019a), a large portion of employees may own a very small number of shares for the beneficial effects of ESOs to be realized. The statistics demonstrate that the *Ulisaju* in Korea is a broad-based ESO in terms of how widely the shares are distributed, but not necessarily in terms of the 'depth.' This, however, makes our analysis a conservative one in terms of detecting the beneficial effects of ESOs.

Conclusion

Despite the limitations, the current research extends the broad-based ESO literature by introducing the business strategy typology by Miles and Snow (1978) as the moderator in the relationship between broad-based ESO and labor productivity. Our study also provides additional evidence to the debate on whether a firm's focus on innovation fosters the adoption of broad-based ESO. Based on the implications of this study, organizations are encouraged to carefully consider their business strategies when adopting a broad-based ESO. The research reported in this manuscript indicates that only the prospectors can benefit from adopting ESO (*Ulisaju* program) in the Korean context.

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Figure 1. Hypothesized Model

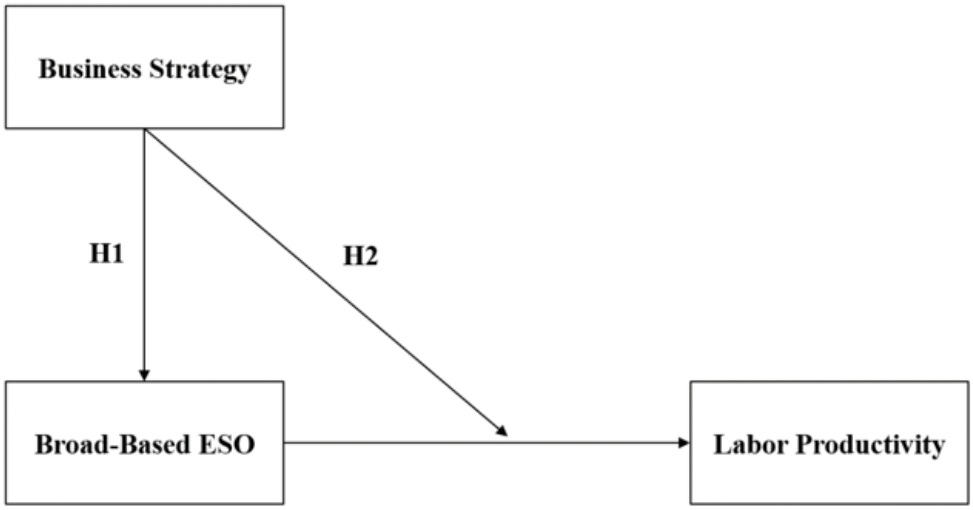
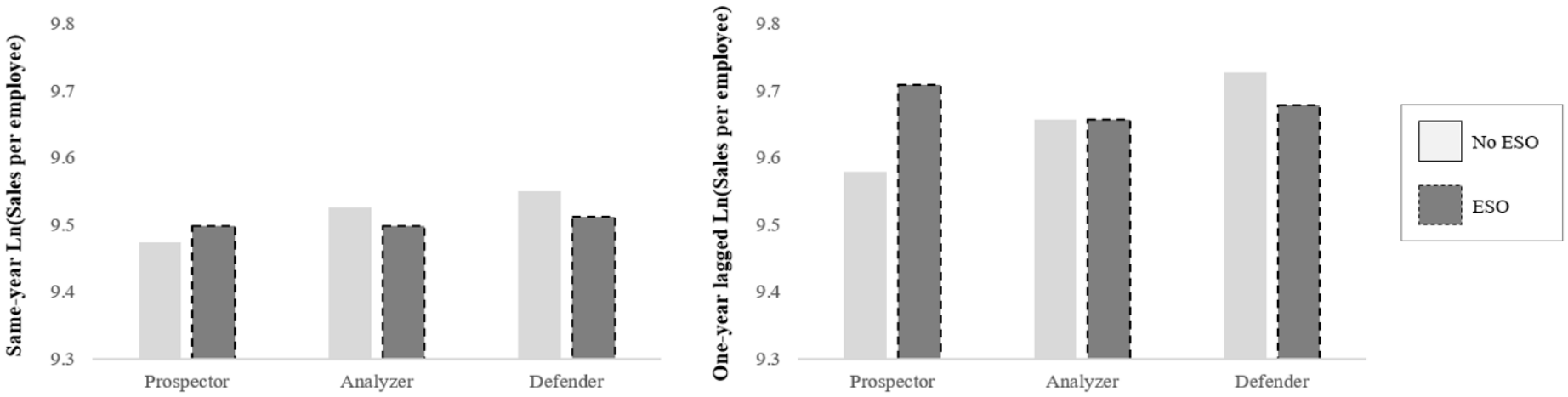


Figure 2. Interaction between Broad-Based Employee Share Ownership and Strategy Type Predicting Labor Productivity



Note 1. Calculations are based on values from Model C3 in Table 4 for the case of same-year labor productivity as the dependent variable.

Note 2. Calculations are based on values from Model D3 in Table 4 for the case of one-year lagged labor productivity as the dependent variable.

Table 1. Means, Standard Deviations, and Correlations of the Variables

Variables	Mean	s.d.	1	2	3	4	5	6	7	8	9	10
1. Ln[a](Labor productivity[b]: same-year)	12.901	0.898										
2. Ln(Labor productivity: one-year lagged)	12.958	0.947	0.908									
3. Broad-based employee share ownership	0.262	0.440	0.078	0.099								
4. Strategy: Prospector	0.319	0.466	0.015	0.018	0.103							
5. Strategy: Analyzer	0.405	0.491	0.012	0.005	-0.003	-0.565						
6. Strategy: Defender	0.276	0.447	-0.029	-0.024	-0.105	-0.423	-0.509					
7. Industry: Manufacturing	0.733	0.443	0.154	0.160	-0.066	-0.016	0.009	0.007				
8. Industry: Finance	0.067	0.250	0.295	0.296	0.130	0.080	0.019	-0.104	-0.443			
9. Industry: Other Services	0.200	0.400	-0.354	-0.361	-0.008	-0.032	-0.022	0.057	-0.829	-0.134		
10. Year: 2007	0.247	0.431	-0.132	-0.075	0.041	0.031	-0.026	-0.003	-0.037	0.015	0.032	
11. Year: 2009	0.249	0.433	0.019	0.058	0.040	0.033	0.004	-0.039	-0.008	0.002	0.007	-0.330
12. Year: 2011	0.271	0.445	0.097	0.048	-0.022	-0.023	0.050	-0.031	0.025	-0.006	-0.025	-0.349
13. Year: 2013	0.233	0.423	0.013	-0.033	-0.060	-0.041	-0.030	0.076	0.019	-0.011	-0.014	-0.315
14. Size: Ln(Number of employees)	5.970	1.061	0.190	0.197	0.094	0.151	0.018	-0.177	-0.118	0.270	-0.038	0.052
15. Union	0.472	0.499	0.227	0.224	0.030	-0.006	0.013	-0.008	0.108	0.088	-0.174	0.036
16. Ln(Pay level[c])	3.705	0.231	0.484	0.445	0.114	0.118	-0.018	-0.103	-0.220	0.429	-0.024	-0.140
17. Sales growth	0.245	0.991	0.056	0.060	0.028	0.015	-0.028	0.015	-0.009	0.029	-0.008	0.010
18. Ln(Capital intensity[b])	11.811	3.235	0.255	0.262	0.121	0.054	-0.019	-0.035	0.066	0.108	-0.140	-0.015
19. Early promotion	0.560	0.497	-0.003	0.003	0.071	0.111	0.016	-0.133	-0.067	0.066	0.033	0.108
20. Internal job posting	0.256	0.437	0.076	0.060	0.063	0.108	0.000	-0.113	-0.283	0.227	0.171	-0.017
21. Balanced score card	0.243	0.429	0.110	0.094	0.030	0.087	0.016	-0.109	-0.082	0.093	0.033	0.024
22. Pay based on job evaluation	0.092	0.289	0.031	0.027	0.007	0.121	-0.051	-0.071	-0.008	0.028	-0.008	0.019
23. Investment in training[c]	0.389	0.571	0.265	0.239	0.052	0.130	-0.013	-0.121	-0.217	0.201	0.114	0.024

Variables	11	12	13	14	15	16	17	18	19	20	21	22
12. Year: 2011	-0.351											
13. Year: 2013	-0.318	-0.336										
14. Size: Ln(Number of employees)	0.018	-0.035	-0.034									
15. Union	-0.001	-0.005	-0.030	0.353								
16. Ln(Pay level[c])	-0.064	0.051	0.155	0.532	0.288							
17. Sales growth	0.070	0.034	-0.117	0.007	-0.045	0.000						
18. Ln(Capital intensity[b])	0.036	0.001	-0.022	0.103	0.139	0.191	0.052					
19. Early promotion	0.008	-0.025	-0.092	0.061	-0.124	-0.014	0.039	-0.024				
20. Internal job posting	-0.030	0.035	0.012	0.283	0.024	0.277	-0.022	-0.014	0.077			
21. Balanced score card	0.007	-0.001	-0.030	0.172	0.068	0.145	0.002	0.021	0.104	0.148		
22. Pay based on job evaluation	-0.008	0.025	-0.037	0.050	-0.006	0.037	-0.020	0.032	0.055	0.066	0.017	
23. Investment in training[c]	0.052	-0.023	-0.054	0.280	0.094	0.369	0.030	0.118	0.042	0.216	0.136	0.015

N = 1,601 (614 organizations), a: Ln: Natural logarithm, b: In thousand KRW per employee, c: In million KRW per employee

Note 1. Correlations with the absolute value of 0.050 or larger are significant at $p < 0.05$ level.

Note 2. Correlations are Pearson correlations (not accounting for multi-leveled nature).

Table 2. Bernoulli Distribution HLM Predicting the Adoption of Broad-Based Employee Share Ownership (Defender Strategy as the Base for Comparison)

Variables		Dependent Variable: Broad-Based Employee Share Ownership	
		Model A1	Model A2
	Constant	-1.787**	-7.743**
		(0.172)	(1.943)
Independent variables	Strategy: Prospector[a]	0.863**	0.701**
		(0.211)	(0.221)
	Strategy: Analyzer[a]	0.498*	0.411*
		(0.203)	(0.209)
Controls	Industry: Finance[b]		0.548
			(0.413)
	Industry: Other services[b]		0.357
			(0.269)
	Year: 2009[c]		-0.086
			(0.194)
	Year: 2011[c]		-0.363†
			(0.204)
	Year: 2013[c]		-0.579*
			(0.228)
	Organization size: Ln(# of employees)		0.156
			(0.113)
	Union		-0.116
			(0.209)
	Ln(Pay level[d])		0.364
			(0.588)
	Sales growth		0.009
			(0.073)
	Ln(Capital intensity[e])		0.324**
			(0.102)
	Early promotion		0.178
			(0.170)
	Internal job posting		0.002
			(0.201)
	Balanced score card		-0.046
			(0.196)
	Pay based on job evaluation		-0.095
			(0.272)
	Investment in training[f]		-0.207
			(0.177)

*N = 1,601 (614 organizations) ** p < 0.01, * p < 0.05, † p < 0.10 Standard errors are shown in parentheses.*

a: Base for comparison: Defender b: Base for comparison: Manufacturing c: Base for comparison: 2007

d: In million KRW e: In thousand KRW per employee f: In million KRW per employee

Table 3. Bernoulli Distribution HLM Predicting the Adoption of Broad-Based Employee Share Ownership (Analyzer Strategy as the Base for Comparison)

Variables		Dependent Variable: Broad-Based Employee Share Ownership	
		Model B1	Model B2
	Constant	-1.289**	-7.332**
		(0.135)	(1.941)
Independent variables	Strategy: Prospector[a]	0.365*	0.290
		(0.183)	(0.188)
	Strategy: Defender[a]	-0.498*	-0.411*
		(0.203)	(0.209)
Controls	Industry: Finance[b]		0.548
			(0.413)
	Industry: Other services[b]		0.357
			(0.269)
	Year: 2009[c]		-0.086
			(0.194)
	Year: 2011[c]		-0.363†
			(0.204)
	Year: 2013[c]		-0.579*
			(0.228)
	Organization size: Ln(# of employees)		0.156
			(0.113)
	Union		-0.116
			(0.209)
	Ln(Pay level[d])		0.364
			(0.588)
	Sales growth		0.009
			(0.073)
	Ln(Capital intensity[e])		0.324**
			(0.102)
	Early promotion		0.178
			(0.170)
	Internal job posting		0.002
			(0.201)
	Balanced score card		-0.046
			(0.196)
	Pay based on job evaluation		-0.095
			(0.272)
	Investment in training[f]		-0.207
			(0.177)

*N = 1,601 (614 organizations) ** p < 0.01, * p < 0.05, † p < 0.10 Standard errors are shown in parentheses.*

a: Base for comparison: Analyzer b: Base for comparison: Manufacturing c: Base for comparison: 2007

d: In million KRW e: In thousand KRW per employee f: In million KRW per employee

Table 4. Normal Distribution HLM Predicting Labor Productivity (Defender Strategy as the Base for Comparison)

Variables		Dependent Variable: Same-Year Ln(Labor Productivity)			Dependent Variable: One-Year Lagged Ln(Labor Productivity)		
		Model C1	Model C2	Model C3	Model D1	Model D2	Model D3
	Constant	9.533**	9.528**	9.551**	9.636**	9.661**	9.727**
		(0.344)	(0.345)	(0.345)	(0.397)	(0.397)	(0.397)
Controls	Industry: Finance[a]	0.485**	0.486**	0.486**	0.564**	0.559**	0.560**
		(0.123)	(0.123)	(0.123)	(0.133)	(0.133)	(0.133)
	Industry: Other services[a]	-0.791**	-0.791**	-0.793**	-0.825**	-0.827**	-0.832**
		(0.073)	(0.073)	(0.073)	(0.078)	(0.078)	(0.079)
	Year: 2009[b]	0.144**	0.144**	0.144**	0.131**	0.131**	0.129**
		(0.024)	(0.024)	(0.024)	(0.029)	(0.029)	(0.028)
	Year: 2011[b]	0.245**	0.244**	0.244**	0.088**	0.089**	0.088**
		(0.026)	(0.026)	(0.026)	(0.031)	(0.031)	(0.031)
	Year: 2013[b]	0.164**	0.164**	0.163**	-0.005	-0.002	-0.004
		(0.030)	(0.030)	(0.030)	(0.035)	(0.035)	(0.035)
	Organization size: Ln(# of employees)	-0.026	-0.026	-0.025	-0.005	-0.006	-0.004
		(0.025)	(0.025)	(0.025)	(0.028)	(0.028)	(0.028)
	Union	0.066	0.066	0.064	0.079	0.079	0.075
		(0.043)	(0.043)	(0.043)	(0.050)	(0.050)	(0.050)
	Ln(Pay level[c])	0.860**	0.861**	0.855**	0.847**	0.841**	0.826**
		(0.100)	(0.100)	(0.100)	(0.116)	(0.116)	(0.116)
	Sales growth	0.031**	0.031**	0.031**	0.026*	0.027*	0.026*
		(0.009)	(0.009)	(0.009)	(0.011)	(0.011)	(0.011)
	Ln(Capital intensity[d])	0.019**	0.019**	0.019**	0.021**	0.021**	0.021**
		(0.005)	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
	Early promotion	0.014	0.014	0.014	0.036	0.035	0.035
		(0.023)	(0.023)	(0.023)	(0.028)	(0.028)	(0.028)
	Internal job posting	0.048†	0.048†	0.050†	-0.021	-0.019	-0.014
		(0.029)	(0.029)	(0.029)	(0.035)	(0.035)	(0.035)
	Balanced score card	0.064*	0.064*	0.065*	0.000	0.001	0.001
		(0.029)	(0.029)	(0.029)	(0.035)	(0.035)	(0.035)
	Pay based on job evaluation	0.003	0.003	0.000	-0.006	-0.006	-0.013
		(0.037)	(0.037)	(0.037)	(0.044)	(0.044)	(0.044)
	Investment in training[e]	0.090**	0.090**	0.090**	0.032	0.033	0.034
		(0.023)	(0.023)	(0.023)	(0.027)	(0.027)	(0.027)
Moderator	Strategy: Prospector[f] (P)	-0.059*	-0.058†	-0.077*	-0.093*	-0.097*	-0.148**
		(0.030)	(0.030)	(0.035)	(0.036)	(0.036)	(0.042)
	Strategy: Analyzer[f] (A)	-0.025	-0.024	-0.025	-0.061†	-0.063†	-0.070†
		(0.027)	(0.027)	(0.030)	(0.032)	(0.032)	(0.036)
Independent variable	Broad-based employee share ownership (BBESO)		-0.008	-0.039		0.045	-0.049
			(0.031)	(0.057)		(0.036)	(0.068)
Interaction effect	BBESO * P			0.064			0.179*
				(0.065)			(0.078)
	BBESO * A			0.011			0.049
				(0.066)			(0.079)
Deviance		2,258.229	2,258.160	2,256.849	2,732.362	2,730.864	2,724.465
$\Delta \chi^2$ (df, compared model)			0.069 (1, B1)	1.311 (2, B2)		1.498 (1, C1)	6.399* (2, C2)

*N = 1,601 (614 organizations) ** p < 0.01, * p < 0.05, † p < 0.10 Standard errors are shown in parentheses.*

a: Base for comparison: Manufacturing b: Base for comparison: 2007 c: In million KRW

d: In thousand KRW per employee e: In million KRW per employee f: Base for comparison: Defender

Table 5. Normal Distribution HLM Predicting Labor Productivity (Analyzer Strategy as the Base for Comparison)

Variables		Dependent Variable: Same-Year Ln(Labor Productivity)			Dependent Variable: One-Year Lagged Ln(Labor Productivity)		
		Model E1	Model E2	Model E3	Model F1	Model F2	Model F3
	Constant	9.508** (0.344)	9.504** (0.345)	9.526** (0.345)	9.576** (0.397)	9.598** (0.398)	9.657** (0.397)
Controls	Industry: Finance[a]	0.485** (0.123)	0.486** (0.123)	0.486** (0.123)	0.564** (0.133)	0.559** (0.133)	0.560** (0.133)
	Industry: Other services[a]	-0.791** (0.073)	-0.791** (0.073)	-0.793** (0.073)	-0.825** (0.078)	-0.827** (0.078)	-0.832** (0.079)
	Year: 2009[b]	0.144** (0.024)	0.144** (0.024)	0.144** (0.024)	0.131** (0.029)	0.131** (0.029)	0.129** (0.028)
	Year: 2011[b]	0.245** (0.026)	0.244** (0.026)	0.244** (0.026)	0.088** (0.031)	0.089** (0.031)	0.088** (0.031)
	Year: 2013[b]	0.164** (0.030)	0.164** (0.030)	0.163** (0.030)	-0.005 (0.035)	-0.002 (0.035)	-0.004 (0.035)
	Organization size: Ln(# of employees)	-0.026 (0.025)	-0.026 (0.025)	-0.025 (0.025)	-0.005 (0.028)	-0.006 (0.028)	-0.004 (0.028)
	Union	0.066 (0.043)	0.066 (0.043)	0.064 (0.043)	0.079 (0.050)	0.079 (0.050)	0.075 (0.050)
	Ln(Pay level[c])	0.860** (0.100)	0.861** (0.100)	0.855** (0.100)	0.847** (0.116)	0.841** (0.116)	0.826** (0.116)
	Sales growth	0.031** (0.009)	0.031** (0.009)	0.031** (0.009)	0.026* (0.011)	0.027* (0.011)	0.026* (0.011)
	Ln(Capital intensity[d])	0.019** (0.005)	0.019** (0.005)	0.019** (0.005)	0.021** (0.005)	0.021** (0.005)	0.021** (0.005)
	Early promotion	0.014 (0.023)	0.014 (0.023)	0.014 (0.023)	0.036 (0.028)	0.035 (0.028)	0.035 (0.028)
	Internal job posting	0.048† (0.029)	0.048† (0.029)	0.050† (0.029)	-0.021 (0.035)	-0.019 (0.035)	-0.014 (0.035)
	Balanced score card	0.064* (0.029)	0.064* (0.029)	0.065* (0.029)	0.000 (0.035)	0.001 (0.035)	0.001 (0.035)
	Pay based on job evaluation	0.003 (0.037)	0.003 (0.037)	0.000 (0.037)	-0.006 (0.044)	-0.006 (0.044)	-0.013 (0.044)
	Investment in training[e]	0.090** (0.023)	0.090** (0.023)	0.090** (0.023)	0.032 (0.027)	0.033 (0.027)	0.034 (0.027)
Moderator	Strategy: Prospector[f] (P)	-0.035 (0.027)	-0.034 (0.027)	-0.052 (0.032)	-0.032 (0.033)	-0.034 (0.033)	-0.077* (0.039)
	Strategy: Defender[f] (D)	0.025 (0.027)	0.024 (0.027)	0.025 (0.030)	0.061† (0.032)	0.063† (0.032)	0.070† (0.036)
Independent variable	Broad-based employee share ownership (BBESO)		-0.008 (0.031)	-0.028 (0.043)		0.045 (0.036)	0.001 (0.052)
Interaction effect	BBESO * P			0.052 (0.055)			0.129* (0.066)
	BBESO * D			-0.011 (0.066)			-0.049 (0.079)
	Deviance	2,258.229	2,258.160	2,256.849	2,732.362	2,730.864	2,724.465
$\Delta \chi^2$ (df, compared model)			0.069 (1, B1)	1.311 (2, B2)		1.498 (1, C1)	6.399* (2, C2)

N = 1,601 (614 organizations) ** $p < 0.01$, * $p < 0.05$, † $p < 0.10$ *Standard errors are shown in parentheses.*

a: Base for comparison: Manufacturing b: Base for comparison: 2007 c: In million KRW

d: In thousand KRW per employee e: In million KRW per employee f: Base for comparison: Analyzer

Table 6. Simple Slope Analysis of the Effect of Broad-Based ESO on Labor Productivity by Strategy Type

Dependent variable	Same-Year Ln(Labor Productivity)			One-Year Lagged Ln(Labor Productivity)		
Strategy type	Prospector	Analyzer	Defender	Prospector	Analyzer	Defender
Broad-based ESO slope (From 0 to 1)	0.025	-0.028	-0.039	0.130*	0.001	-0.049
t-value of broad-based ESO slope	0.583	-0.641	-0.691	2.574	0.010	-0.724
p-value of broad-based ESO slope	0.560	0.522	0.490	0.010	0.992	0.469

N = 1,601 (614 organizations) ** $p < 0.01$, * $p < 0.05$, † $p < 0.10$*

Note 1. Calculations are based on values from Model C3 in Table 4 for the case of same-year labor productivity as the dependent variable.

Note 2. Calculations are based on values from Model D3 in Table 4 for the case of one-year lagged labor productivity as the dependent variable.

Table 7. Descriptive Statistics on Registered Number of Patents by Strategy Type

Strategy Type	Number of data points	Average number of registered patents in the corresponding year	Standard deviation	Number of companies with one or more registered patents in the corresponding year (Percentage)
Prospector	511	34.746	375.894	272 (53%)
Analyzer	648	6.284	49.955	287 (44%)
Defender	442	3.075	16.841	169 (38%)
Total	1601	14.482	215.220	728 (45%)

Table 8. Normal Distribution HLM Predicting Number of Registered Patents

Variables		Dependent Variable: Number of Registered Patents in the Corresponding Year	
		Model G1	Model H1
Constant		-303.834** (62.037)	-298.229** (62.034)
Base for comparison: Defender	Strategy: Prospector	8.632* (4.175)	
	Strategy: Analyzer	5.605 (3.684)	
Base for comparison: Analyzer	Strategy: Prospector		3.027 (3.792)
	Strategy: Defender		-5.605 (3.684)
Control variables[a]		Y	Y

*N = 1,601 (614 organizations) ** p < 0.01, * p < 0.05, † p < 0.10 Standard errors are shown in parentheses.*

a: All the control variables outlined in Tables 4 and 5 were entered.

Table 9. Normal Distribution HLM Predicting Labor Productivity by Strategy Type

Variables	Prospector Firms		Analyzer Firms		Defender Firms	
	Model I1 (DV[a]: LP[b])	Model I2 (DV[a]: 1YR LP[c])	Model J1 (DV[a]: LP[b])	Model JJ (DV[a]: 1YR LP[c])	Model K1 (DV[a]: LP[b])	Model K2 (DV[a]: 1YR LP[c])
Constant	8.375** (0.670)	9.463** (0.630)	9.157** (0.593)	6.672** (0.706)	8.986** (0.765)	9.684** (0.776)
# of Patents	0.000093* (0.000046)	0.000098* (0.000042)	-0.00041† (0.00023)	-0.00042* (0.00019)	0.002 (0.002)	0.001 (0.001)
Control variables[d]	Y	Y	Y	Y	Y	Y
Sample size	511		648		442	

*** p < 0.01, * p < 0.05, † p < 0.10 Standard errors are shown in parentheses.*

a: Dependent variable b: Same-year Ln(labor productivity) c: One-year lagged Ln(labor productivity)

d: All the control variables outlined in Tables 4 and 5 were entered.